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AFCIAC: 25/7


13 September 1949

MEMORANDUM FOR MEMBERS OF AFCIAC:

Subject: Organization of the Armed Forces Security Agency.

Enclosure: Report by the Armed Forces Communications Intelligence Advisory Council to the Joint Chiefs of Staff on Organization of the Armed Forces Security Agency.

1. The enclosed Report which contains the changes recommended at the 4th Meeting of AFCIAC on 8 September is forwarded for information and study. This revised Report will be discussed at the 5th Meeting of AFCIAC, to be held at 0930 on 23 September 1949.


P. J. KARL
for H. D. JONES
Secretariat, AFCIAC

AFCIAC: 25/7

Declassified and approved for release by NSA on 06-12-2012 pursuant to E.O. 13526

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REPORT BY THE ARMED FORCES
COMMUNICATIONS INTELLIGENCE ADVISORY COUNCIL

to the

JOINT CHIEFS OF STAFF

on

ORGANIZATION OF THE ARMED FORCES SECURITY AGENCY

Reference: JCS 2010

THE PROBLEM

1. Pursuant to the directive by the Secretary of Defense in the Appendix to J.C.S. 2010, to prepare, for approval by the Joint Chiefs of Staff, a general consolidation plan for the operation of the two existing major cryptologic* establishments in which efficiency and economy of operations are to be stressed.

FACTS BEARING ON THE PROBLEM

2. Enclosure "A" (page 3).

DISCUSSION

3. Enclosure "B" (page 5).

CONCLUSIONS

4. a. Maximum economy and efficiency can be achieved only by consolidation of associated functions at the same location.
- b. The maximum consolidation practicable to achieve, utilizing present available stations (Arlington Hall Station and Navy Communication Station) without incurring excessive costs, is:
- (1) Concentration of Communication Intelligence, and the major portion of associated Research and Development elements, at Arlington Hall Station.
- (2) Concentration of Communication Security, and the major portion of associated Research and Development elements, at Navy Communication Station.
- c. Such concentration will result in an estimated increase of not less than 10% in effectiveness by reason of increased efficiency, at a cost of but \$14,000 and slight production loss during moving.

* Note - Cryptologic activities consist of Communication Intelligence (foreign communications) activities and Communication Security (own military communications) activities.

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- d. The increase in effectiveness resulting from such concentration is purchased by an increase in vulnerability, in that a catastrophe involving one station could ^{disrupt} ~~interrupt~~ the whole of Communication Intelligence or Communication Security, depending upon which station be destroyed.
- e. The increase in vulnerability should be accepted as a calculated risk at this time, and the concentration outlined in b above should be undertaken immediately.
- f. The Director, AFSA, should initiate a study to determine how best to provide, at a location removed from Washington, D.C., a stand-by center, which would be maintained in caretaker status, but would provide a suitable repository for duplicates of vital files and equipment, in order that production of either Communication Intelligence or Communication Security could be resumed at that location with a minimum loss of continuity in the event of partial or complete destruction of either or both stations in the Washington area.

RECOMMENDATIONS

- 5. It is recommended that the Joint Chiefs of Staff:

 - a. Note conclusions a, b, c and, d and approve conclusions e and f.
 - b. Furnish a copy of this paper to the Secretary of Defense for his information.

~~TOP SECRET~~FACTS BEARING ON THE PROBLEM

1. The status quo of the Service cryptologic activities in the Washington area is as follows:

a. The number of persons engaged in the three basic cryptologic operations of the Army at Arlington Hall Station are:

Communication Intelligence (foreign communications)	1880
Communication Security (own military communications)	364
Cryptologic Research & Development	370

b. Corresponding figures for the Navy cryptologic activities at the Navy Communication Station, Washington are:

Communication Intelligence:	1400
Communication Security:	300
Cryptologic Research & Development:	190

c. The Air Force has no comparable establishment.

2. At Arlington Hall Station there are 420,000 sq. ft. of operational floor space.

3. At the Navy Communication Station there are 245,000 sq. ft. of operational floor space.

4. The total operational floor space (665,000 sq. ft.) must provide not only for all AFSA operational cryptologic activities, but also for AFSA administrative and support activities, and for such individual Service cryptologic activities as must remain at each station.

5. All of the construction at Arlington Hall Station is temporary and non-fire proof.

6. The greater portion of the construction at the Navy Communication Station is permanent and semi-fire proof.

7. The approximate operational floor space requirements for the concentration of each of the component cryptologic activities are:

a. Communication Intelligence:	287,000 sq. ft.
b. Communication Security:	133,000 sq. ft.
c. Cryptologic Research & Development:	135,000 sq. ft.

8. Much of the equipment used by each Service in each of its cryptologic activities requires certain special provisions, such as air conditioning, exceptional floor strength, and considerable electric power. These special requirements, often coupled with a great complexity of design and installation, make such equipment difficult and costly to move.

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9. Changes in the status quo of the two major establishments will result in some expense and some temporary loss in production.

10. Economy and efficiency are to be stressed in AFSA operations.

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DISCUSSION

In determining a logical consolidation plan for the two existing major cryptologic activities (those of the Army at Arlington Hall Station in Virginia, and those of the Navy at the Navy Communication Station in Washington, D.C.), the first question to be answered with respect to each of the three component activities (Communication Intelligence, Communication Security, and Cryptologic Research and Development) is: Given the unified control deriving from the creation of AFSA, to what extent is the physical concentration of the various elements of each of the components necessary or desirable for most efficient and economical operations?

A comprehensive examination of the situation with respect to the three component functions revealed the following:

a. Communication Intelligence (COMINT)

- (1) Those cryptanalytic problems which are now under attack are already divided between the Army and Navy, so that in the purely cryptanalytic portion of the Communication Intelligence field there is practically no undesirable duplication of effort.
- (2) The present division of cryptanalytic problems is on a Service basis, so that for the most part each of the various National problems is now divided. A physical concentration of all cryptanalytic problems would, by bringing together all parts of each National problem, offer the best chance of success against each problem. Furthermore, the concentration of skilled cryptanalysts would result in greater flexibility of the cryptanalytic attack, permitting a more facile response to the changing aspects of the entire cryptanalytic problem.
- (3) The production of COMINT requires four ancillary activities: (a) Maintenance of central files of collateral information and COMINT items; (b) Operation of analytical machinery; (c) Collection and distribution of raw traffic; and (d) Preparation (editing and printing in accordance with prescribed forms) and delivery of COMINT end products to authorized consumer agencies. As long as the

cryptanalytic problems are divided, separate units must be maintained at each station to perform these functions. The concentration of ancillary functions (which would be made possible by the concentration of the cryptanalytic problems) would result in greater efficiency and economy of operations, and, in certain cases, in direct savings in personnel.

b. Communication Security (COMSEC)

- (1) At the present time, separate production, distribution and accounting, and evaluation units are maintained at each of the two major stations.
- (2) Concentration of these Security facilities at one station will result in greater flexibility and economy in the actual production by AFSA of cryptographic equipment and documents for the three Services, and greatly facilitate AFSA distribution, accounting, and evaluation activities.

c. Cryptologic Research and Development (R & D)

- (1) The Cryptologic Research and Development activities can be divided into two principal fields: Activities in support of COMINT; and those in support of COMSEC.
- (2) From the viewpoint of efficiency and economy of operations, each of these two fields of the separate service R & D activity should be consolidated and appropriate parts co-located with the activity to be supported. (Thus, the physical consolidation of

all R & D activities would be desirable only in the event that both COMINT and COMSEC are located in one station, a situation which is not possible at either station now available without extensive new construction.

Accordingly, it is clear that the ends of efficiency and economy of operation can best be served by achieving, if possible, the following conditions: (1) Concentration of COMINT at one station; (2) Concentration of COMSEC at the other station; and (3) Location of the appropriate elements of R & D with the activity which they support, with concentration of overall control of R & D activities.

It can be seen from the figures showing the operational space available at the two stations (p. 3 of Encl. A) that it is possible to concentrate the COMINT activities only at Arlington Hall Station (AHS), but that COMSEC activities can be concentrated at either station. Thus, assuming that there is to be a total concentration of COMINT activities, it follows that it must be at the AHS. For a number of reasons, this solution with respect to the location of COMINT appears to be favorable:

- a. The COMSEC production facilities at NCS are much superior to those at AHS. These facilities are much more difficult, time-consuming, and costly to move than are the COMSEC facilities now at AHS, so that COMSEC can be concentrated at NCS at far less cost, both in production and money, than at AHS.
- b. Similar elements of R & D can be consolidated and, except where too costly to move, can be co-located with the activity which they support.

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2. The space remaining at both AHS and NCS is adequate for locating necessary AFSA Headquarters offices, and those individual Service activities which may remain at the two major stations.

Having determined the best disposition of the various AFSA components from the viewpoint of maximum efficiency and economy of operations it is necessary to see whether the direct monetary cost, or the decreased production arising from the moves necessary to achieve that disposition, are justified.

It develops that there is but one major obstacle to achieving the desired disposition: The cost (in both dollars and production) of relocating certain major pieces of electronic analytical equipment at AHS which are now at NCS would be prohibitive, particularly since it is possible to operate this equipment remotely without serious loss in economy and efficiency. The idea of complete concentration of COMINT activities at AHS, is, therefore, abandoned in favor of concentrating this particular type of equipment at NCS (which, incidentally, is the more nearly fire proof location). This is not as economical and efficient an arrangement as complete concentration; but the difference is not great, and moreover, as will be brought out more fully below, the arrangement has advantages in the field of security.

Accepting the foregoing modifications to the complete concentration plan, the estimated costs, in direct monetary expenditures of obtaining the desired disposition of the several AFSA components are approximately as follows:

COMPONENT	:	COST
		\$
COMINT	:	3,700
COMSEC	:	5,000
R & D	:	5,000

There would be a temporary drop in production while the moves necessary to obtain the desired disposition were being carried out, but the total loss is estimated at less than 2% of one year's production on the present scale.

Balanced against the above costs, the recommended disposition offers the following estimated direct personnel savings and expansion of

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present operations when compared to the status quo:

COMPONENT	: DIRECT PERSONNEL : : SAVING	: % EXPANSION OF : PRESENT OPERATIONS
COMINT	: 20	:)
COMSEC	: 0	:)
R & D	: 0	:)
		:) at least 10%

Having thus determined the best possible locations of the several AFSA components from the standpoint of efficiency and economy of operations, there remains to be considered whether any other factor poses a problem sufficiently serious to demand consideration at this time.

There is one factor: Security.

The arrangement of AFSA components dictated by efficiency and economy of operations may be said to place all of each of AFSA's two kinds of eggs in a single basket: COMINT at AHS, COMSEC at NCS (alleviated somewhat in the case of COMINT by having certain important electronic COMINT equipment located at NCS). In time of peace, we would thus be risking the loss, through accidental fire or sabotage at one station, of all the existing specialized equipment and documents necessary to the conduct of that operation, and possibly many of the skilled personnel. Because of the far greater centralized nature of the COMINT operation, such a loss even though disastrous to COMSEC, would be even worse for COMINT. Yet, because of space requirements, we have proposed to concentrate COMINT largely at the station whose construction renders it the more vulnerable to such a disaster. It seems necessary, therefore, to inquire as to whether there is any reasonable method of obviating this risk. The first possibility that suggests itself is a division of COMINT activities between the two stations, either in the form of the status quo or some other possible division which might present advantages over the present one.

There is one other division which presents certain advantages over the present one. As previously stated, one advantage of the concentration of all purely cryptanalytic activities is an

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increased effectiveness of attack against any particular problem - an effectiveness resulting from the concentration of all of the parts of each similar cryptanalytic problem. This same concentration, and thus this same advantage, can be obtained by changing the present allocation of problems so that each of the separate National problems is concentrated at one or the other of the two stations. For a number of reasons, the logical division in this case would be all Russian problems at NCS and all other problems at AHS. By such an arrangement we would greatly reduce the peacetime risk of loss through accidental fire or sabotage.

An examination of this arrangement from other considerations, however, reveals that it has serious defects. In the first place, since all of the COMINT ancillary functions must remain duplicated at each station, it is not consistent with the stressing of efficiency and economy of COMINT operations. In addition, if COMINT is divided between the two stations, then, because of space limitations, COMSEC also must be divided, and thereby the possibility of stressing efficiency and economy in any phase of AFSA operations is lost. Next, the increase in security gained by such a disposition obtains only in time of peace, the 9,000 yards dispersion of the two stations affording little, if any, security in time of war. Yet it is in time of war that the uninterrupted functioning of cryptologic activities becomes a matter of incalculable importance to the nation. Thus, this arrangement, while offering a peacetime solution to the security problem, is a peacetime solution only, and moreover, must be purchased at the price of economy and efficiency of operations. It is, therefore, unacceptable.

An additional (alternate) major station available in caretaker status - remote from the Washington area appears to be essential. There copies of vital cryptologic material could be stored or otherwise maintained.

The need for such a station is present no matter what form the consolidation of the activities of the two major stations in

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the Washington area assumes. It is more urgent, however, in connection with the proposed concentration of COMINT and COMSEC than would be the case in any division of such activities.

The tentative organization of AFSA Headquarters is shown in Appendix A.

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AFSA HEADQUARTERS
(At Washington, D.C. and
Arlington, Va.)

12 SEPT. 1949

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